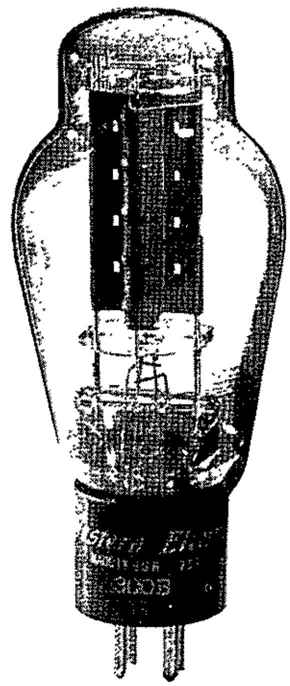


**TRIODE**

**POWER AMPLIFIER**

*Western Electric*

### DESCRIPTION

The 300B is a filamentary type triode designed for use as an audio-frequency power amplifier.

### CHARACTERISTICS

| | | |
|---|---|---|
| Filament Voltage | | 5.0 volts |
| Plate Current | $E_b$ = 350 volts; $E_c$ = −74 volts | 60 milliamperes |
| Power Output | | 8 watts |

## GENERAL CHARACTERISTICS

### ELECTRICAL DATA

| | |
|---|---|
| Filament Voltage, A-C or D-C | 5.0 volts |
| Filament Current | 1.2 amperes |
| Direct Interelectrode Capacitances | |
| Grid to Plate | 15 uuf |
| Input | 8.5 uuf |
| Output | 4.1 uuf |

### MECHANICAL DATA

| | |
|---|---|
| Cathode | Coated Filament |
| Base | Medium 4-pin with skew bayonet pin |
| Mounting Position | Preferably vertical; if horizontal, pins #1 and #2 must be in same vertical plane |

Dimensions and pin connections shown in outline drawing on Page 6

### MAXIMUM RATINGS, Design-Center Values

| | |
|---|---|
| Plate Voltage | 400 volts |
| Plate Current | 100 milliamperes |
| Plate Dissipation | 36 watts |

| | |
|---|---|
| Maximum Grid Circuit Resistance for | |
| Fixed Bias | 0.05 megohm |
| Self Bias | 0.25 megohm |

## TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

### SINGLE TUBE AMPLIFIER — CLASS $A_1$

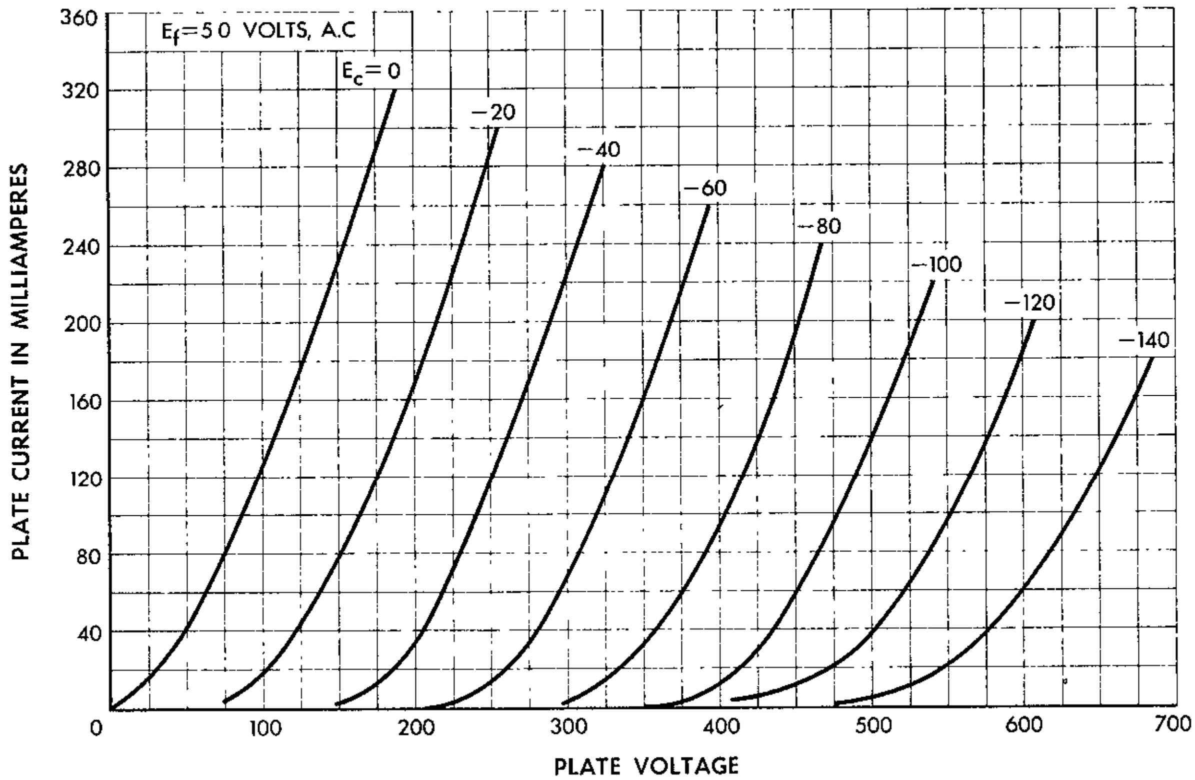
| | | | |
|---|---|---|---|
| Filament Voltage, A-C | 5.0 | 5.0 | volts |
| Plate Voltage | 300 | 350 | volts |
| Grid Voltage | −61 | −74 | volts |
| Peak A-F Signal Voltage | 61 | 74 | volts |
| Zero Signal Plate Current | 62 | 60 | milliamperes |
| Maximum Signal Plate Current | 74 | 77 | milliamperes |
| Transconductance | 5300 | 5000 | micromhos |
| Plate Resistance | 740 | 790 | ohms |
| Load Resistance | 3000 | 4000 | ohms |
| Amplification Factor | 3.9 | 3.9 | |
| Maximum Signal Power Output | 6 | 7 | watts |
| Total Harmonic Distortion | 5 | 5 | per cent |

### PUSH-PULL AMPLIFIER — CLASS $A_1$

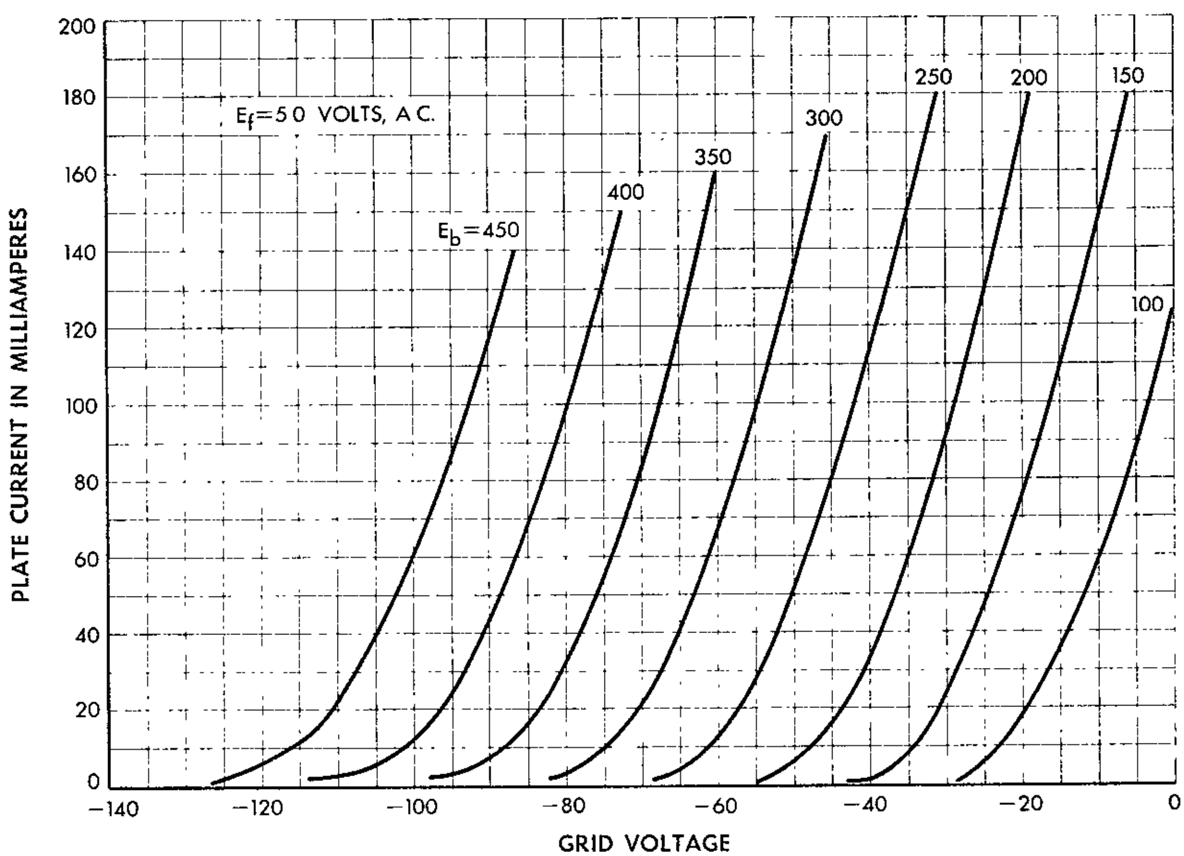
Unless otherwise specified, values are for 2 tubes

| | | | |
|---|---|---|---|
| Filament Voltage, A-C | 5.0 | 5.0 | volts |
| Plate Voltage | 300 | 350 | volts |
| Grid Voltage* | −61 | −67.5 | volts |
| Peak A-F Grid-to-Grid Voltage | 122 | 135 | volts |
| Zero Signal Plate Current | 100 | 170 | milliamperes |
| Maximum Signal Plate Current | 150 | 200 | milliamperes |
| Effective Load Resistance (Plate-to-Plate) | 4000 | 4000 | ohms |
| Maximum Signal Power Output | 10 | 20 | watts |
| Total Harmonic Distortion | 4.5 | 2 | per cent |

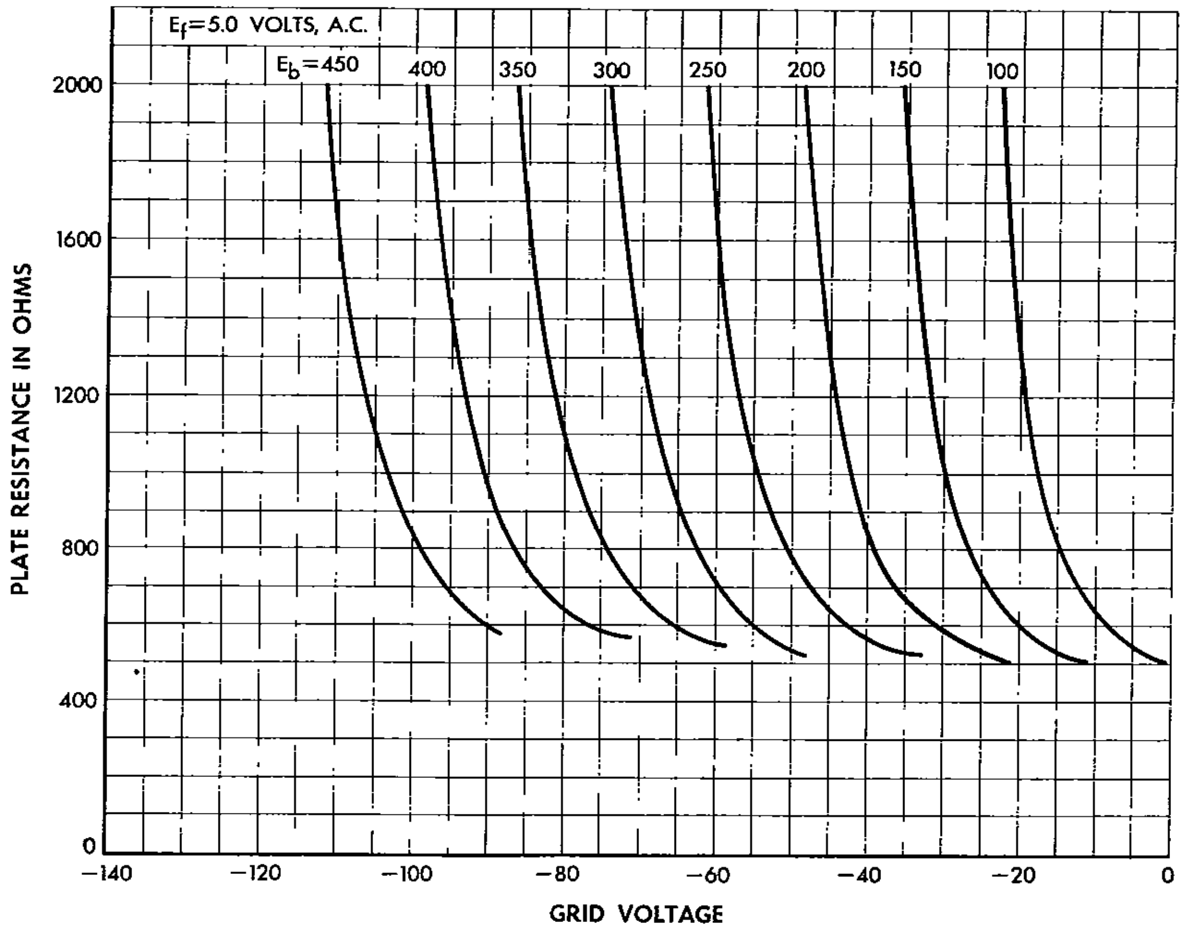
*If the filament is operated on D.C., the characteristics will be approximately the same if the grid voltage, measured from the negative filament, is decreased by 2.5 volts.

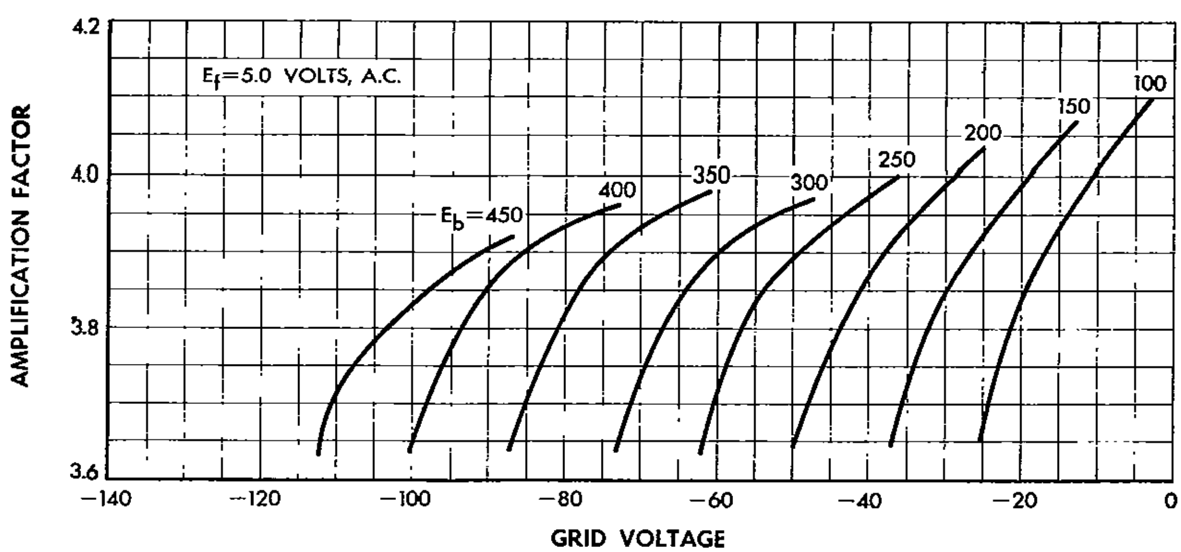


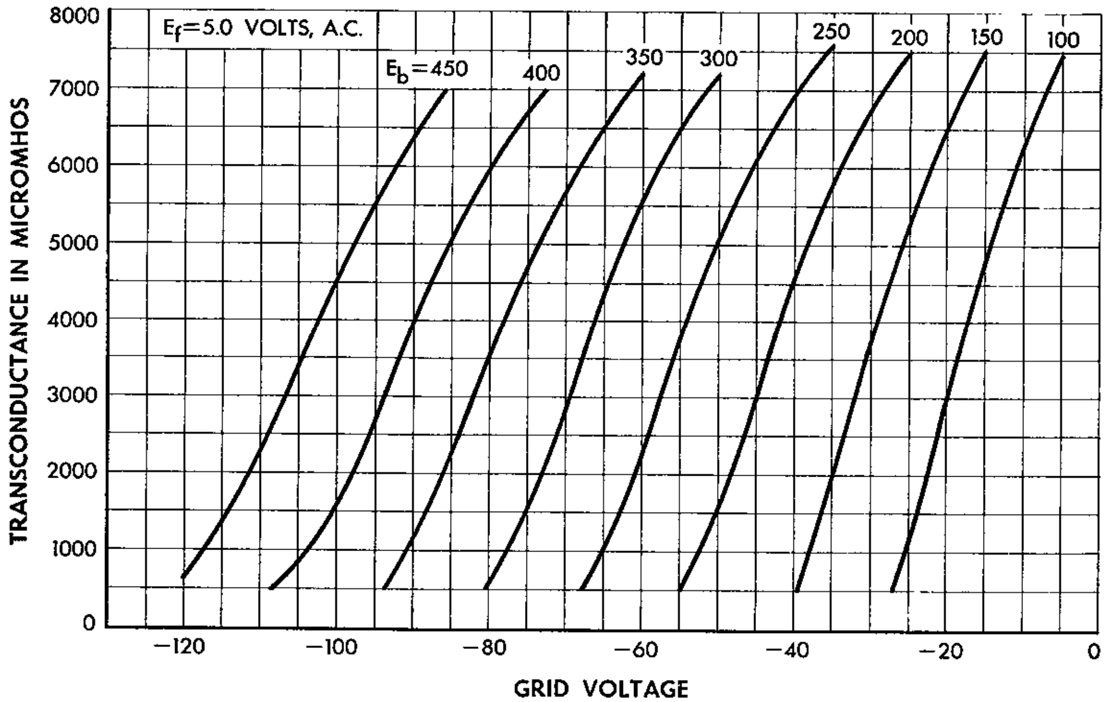
$E_f$=5.0 VOLTS, A.C
$E_c$= 0
−20
−40
−60
−80
−100
−120
−140
PLATE CURRENT IN MILLIAMPERES
360
320
280
240
200
160
120
80
40
0
100
200
300
400
500
600
700
PLATE VOLTAGE

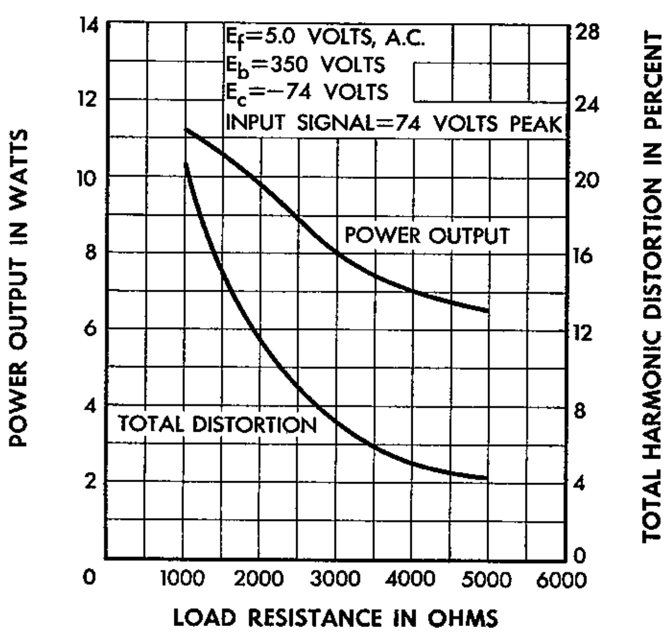



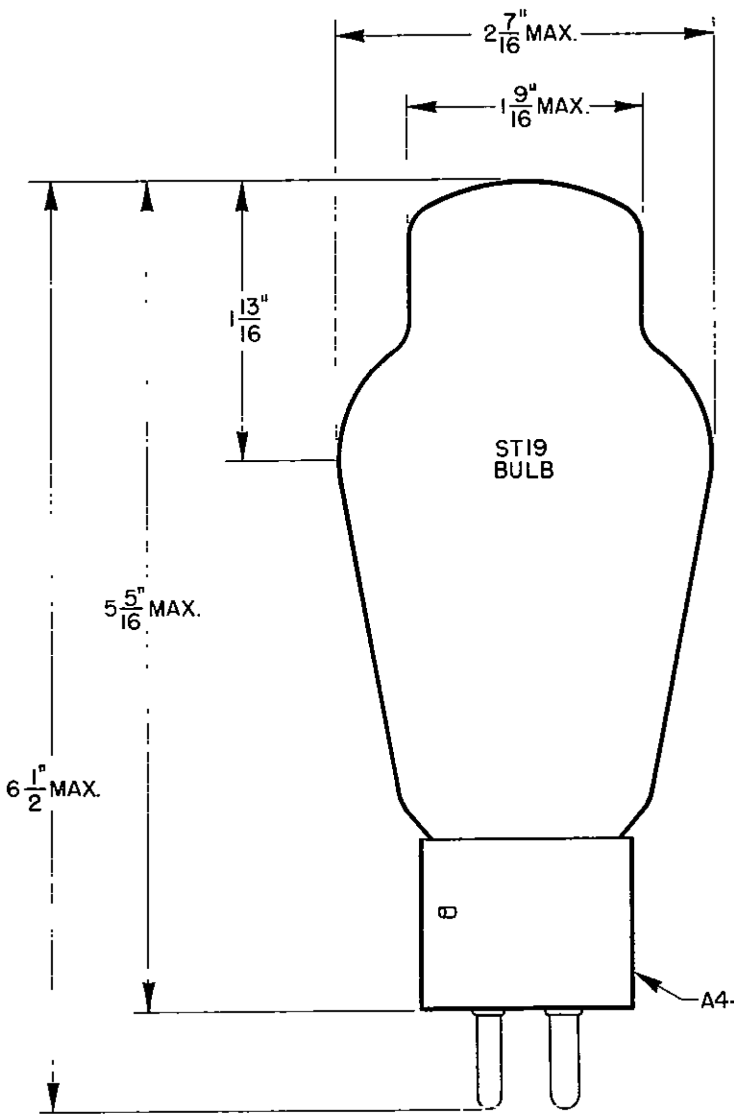
$E_f$=5.0 VOLTS, A.C.
$E_b$=450
400
350
300
250
200
150
100
PLATE CURRENT IN MILLIAMPERES
200
180
160
140
120
100
80
60
40
20
0
−140
−120
−100
−80
−60
−40
−20
0
GRID VOLTAGE

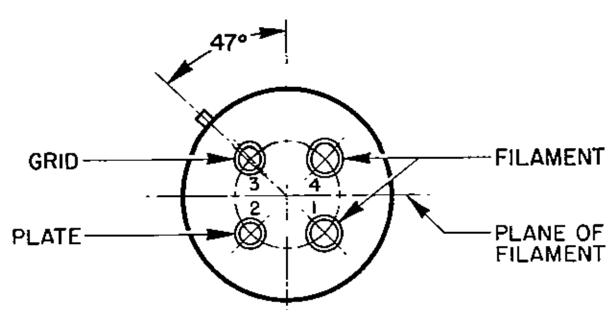

Ef=5.0 VOLTS, A.C.
Eb=450
400
350
300
250
200
150
100
PLATE RESISTANCE IN OHMS
2000
1600
1200
800
400
0
−140
−120
−100
−80
−60
−40
−20
0
GRID VOLTAGE


Ef=5.0 VOLTS, A.C.
Eb=450
400
350
300
250
200
150
100
AMPLIFICATION FACTOR
4.2
4.0
3.8
3.6
−140
−120
−100
−80
−60
−40
−20
0
GRID VOLTAGE


Ef=5.0 VOLTS, A.C.
Eb=450
400
350
300
250
200
150
100
TRANSCONDUCTANCE IN MICROMHOS
8000
7000
6000
5000
4000
3000
2000
1000
0
−120
−100
−80
−60
−40
−20
0
GRID VOLTAGE


Ef=5.0 VOLTS, A.C.
Eb=350 VOLTS
Ec=−74 VOLTS
INPUT SIGNAL=74 VOLTS PEAK
POWER OUTPUT
TOTAL DISTORTION
POWER OUTPUT IN WATTS
14
12
10
8
6
4
2
0
TOTAL HARMONIC DISTORTION IN PERCENT
28
24
20
16
12
8
4
0
1000
2000
3000
4000
5000
6000
LOAD RESISTANCE IN OHMS




**Western Electric**

A development of Bell Telephone Laboratories, the research laboratories of the American Telephone and Telegraph Company and the Western Electric Company.